USDA Forest Service
U.S. DEPARTMENT OF AGRICULTURE

Lassen National Forest | September 2024

Park Fire Burned Area Summary

Burned Area Report

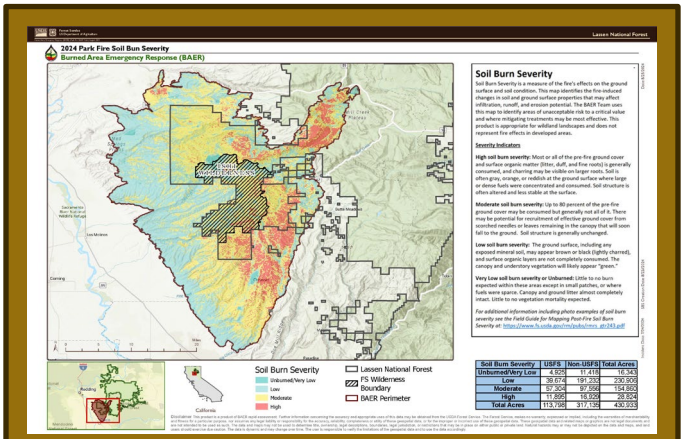
Fire Background

On July 24, 2024, the Park Fire started near Bidwell Municipal Park in Chico, California. The fire grew with rapid rates of spread and extreme fire behavior. The fire quickly burned through the 41,000-acre Ishi Wilderness and moved deeper into the Lassen National Forest, as well as private, state and other Federal lands. The Park Fire was a CAL-FIRE incident but the USDA Forest Service and Lassen National Forest were fully engaged with our partners and working toward full suppression in order to protect our communities and natural resources.

A USFS Burned Area Emergency Response (BAER) assessment team began field reconnisance on August 19. This entailed mapping soil burn severity, characterizing hydrologic behavior, and identifying geoglogic hazards in close collaboration with a California Watershed Emergency Response Team (WERT). In addition, interagency coordination began with interested partners, representatives from Tehama and Butte Counties, state, and federal agencies, including the following tribes: Pit River Tribe, Redding Rancheria, Mechoopda Tribe, and Paskenta Band of Nomlaki Indians.

While many wildfires cause minimal damage to the landscape and pose few threats downstream, some require special efforts to reduce impacts afterwards. The BAER program identifies potential risks to resources on National Forest System (NFS) lands and reduces them through appropriate emergency measures—to protect human life and safety, property, and critical natural and cultural resources. Under this emergency stabilization program, time-critical activities are completed before severe weather can cause additional damage.

BAER teams are made up of experts in various resource disciplines and assess the post-fire effects to critical values on Forest Service lands. The primary indicator of potential post-fire changes in watershed response and recovery are soil impacts. The team developed a soil burn severity (SBS) map to document the degree to which the fires had changed soil properties. Using these maps, physical scientists can predict erosion potential, changes to runoff and flood flows, and increases in geologic hazards. Field evaluations and modeling results are used to determine relative increases in post-fire risk to different critical values and inform recommendations to address these increased risks.



Park Post-Fire Soil Burn Severity Map

Soils

Soil burn severity (SBS) is not an assessment of vegetation consumption, but rather an integration of changes in physical

and chemical changes to the soil including soil structure, soil organic matter, infiltration capacity, all of which may indicate relative degrees of soil heating.

The final soil burn severity map was developed with GIS software using satellite-imagery-derived Burned Area Reflectance Classification (BARC) and field survey data. Coordinated field work with the California WERT and BAER teams included an assessment of ash characteristics, ground cover, root condition, soil structure, soil water-repellency, effective ground cover and vegetation type as described in the Field Guide for Mapping Post-fire Soil Burn Severity (Parsons et al. 2010). High soil burn severity is characterized by a complete consumption of organic material with the surface layers of the soil resulting in a change to single-grain structure. Fine roots are commonly charred or consumed 3-5 cm deep. The highest-severity areas often have a loose, dusty appearance, and no longer have any cohesion or soil strength. Generally, there will be less destruction of soil organic matter, roots, and structure in an area mapped as moderate compared to high. In areas mapped as moderate SBS, soil structure, roots, and litter layer may remain intact beneath a thin ash layer. Low soil burn severity results in very little alteration of soil organic matter and little or no change in soil structural stability.

Mapped and validated SBS for the Park Fire burned area is:

- High (7%),
- Moderate (36%),
- Low (53%), and
- Very Low/Unburned (4%) (see map above).

The more severe a fire's effects are on the soil, the more likely those soils will erode in subsequent rainstorms – especially in locations with steep slopes. Erosion after fires can cause tremendous damage to homes and other structures in the years after a fire.

Soil burn severity was mapped for all developed areas, both urban and rural, within the affected landscape. It is important to note that the mapping method applied was originally developed for wildland vegetation and landscapes, and as such, it may not be the most suitable approach for developed lands or areas with burned structures. However, using a combination of modeling and the professional judgment of the WERT and BAER, all areas, including various ownerships, were mapped for soil burn severity

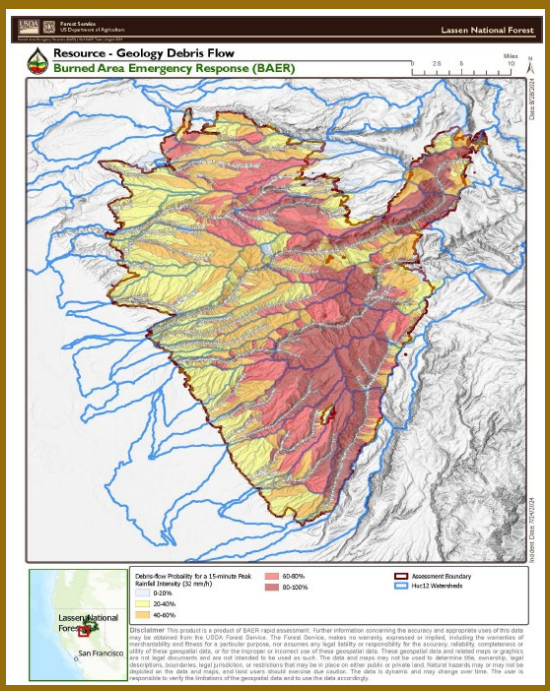
Geology

The team identified the geologic conditions and processes that have shaped and altered the watersheds and landscapes and assessed the impacts from the fire on those conditions and processes that could affect downstream critical values. Using the understanding of rock types and characteristics, geomorphic processes, and distribution of geologic hazards helps predict how the watersheds will respond to and be impacted by upcoming storms.

The Park Fire area is in the Cascade Range Province. The Cascade Range is a chain of volcanic peaks, extending through Washington and Oregon into California. The southern termination of the Cascade Range is the Lassen Volcanic Area, which last erupted in early 1914 and is considered an active volcano. The Lassen Volcanic Area has four volcano types including Cinder Cones, Composite Volcano (Mount Tehama), Shield Volcano (Prospect Peak) and Plug Dome (Lassen Peak).

The fire is underlain with volcanic rocks that flowed off Mount Lassen. These rocks consist of flat, gentle slopes underlain with basalt, basaltic andesite, and rhyolitic lava flows covered by older glacial till deposits, colluvial deposits and alluvial fan deposits. The lava flows are also underlain by ash and tuff beds.

The tuff beds in a high soil burn severity have a significant decrease in infiltration. Re-initiation of mass wasting features can contribute to debris flows concentrating in channel networks. Debris flow footprints and deposits were observed in many parts of the fire area including tributaries to Mill Creek, tributaries to Deer Creek, and tributaries to Antelope Creek.



Park Fire Debris Flow Probability based on a peak 15-minute rainfall intensity storm of 32 mm/h

The team provided soil burn severity field data to the US Geological Survey (USGS) Landslide Hazard Program to assist in forecasting the probability, potential volumes, and hazards of debris flows through their developed empirical models.

Within the Park burn area, several high potential debris flow, landslide, and rock-fall hazard areas were identified, based on ground observations and the USGS Post-Fire Debris Flow Hazard Model.

The magnitude of storm that was chosen for analysis was a peak 15-minute rainfall intensity storm of 32 mm/hr rate (1.25 in/hr), equivalent to the accumulation of 8 mm (0.31 in) over 15 minutes. Based on NOAA Atlas 14, this peak 15-minute intensity has a 1-year recurrence interval (RI) in the Upper Mill Creek area. The 15-minute peak intensity has been shown to be the most predictive metric for debris flow initiation as post-fire debris flows are most often triggered by high-intensity, short-duration bursts of rain (USGS). (see map above).

Hydrology

Primary watershed response is expected to include an initial flush of ash and burned materials, erosion in drainages and on steep slopes in the burned area, increased peak flows and sediment transport and deposition, and debris flows. Watershed response is dependent on the occurrence of rainstorms and rain-on-snow events and will likely be greatest with initial storm events. Increased watershed response is most likely in areas with high to moderate soil burn severity. Disturbances will become less evident as vegetation is reestablished, providing ground cover that reduces erosion and increases surface roughness which slows flow accumulation and increases infiltration.

A rapid hydrologic assessment suggests that the primary watershed responses of the Park Fire are expected to include: 1) an initial flush of ash and debris, 2) rill and gully erosion on steep slopes within the burned area, and 3) potential flash floods and debris flows during short duration high intensity summer monsoonal precipitation events (less common), as well as during long duration winter atmospheric river precipitation events (more common). While the burned topography is variable in steepness, storms will likely create increased surface flow that could trigger floods or debris flows with sediment and floatable debris due to the areas now being devoid of vegetation and groundcover after the fire. The

responses are expected to be most pronounced during the first 5 years after the fire and will become less evident as vegetation and soil-hydrologic function recover.

This will likely lead to increased water quality concerns for fish and fish habitat, and municipal and domestic drinking water providers within and downstream of the fire.

Forest Service Critical Values

The first critical value BAER teams assess is always human life and safety on National Forest System lands. During and after heavy rainstorms, Forest Service employees and visitors to National Forest System Lands could be threatened by floodwaters and debris flows. In addition, users of roads within and downstream of the burned areas may be affected by road washouts during and after heavy rainstorms. The National Weather Service can establish an early warning alert plan for areas that are potentially at risk from these events. The BAER team recommends general hazard warning and closure signs for roads, trails and developed recreation sites, gates, and communication to travelers on any National Forest System (NFS) roads and trails within or directly adjacent to the Park Fire.

In addition to specific treatments, the BAER team recommends the removal of “danger trees” (fire-killed trees) in areas where crews will be working to implement identified treatments.

Roads and Bridges

Roads in and downstream of burned areas are at risk of damage due to post-fire conditions. The most likely threat due to the fires is clogging of culverts, bridges, and other in-channel infrastructure from the higher levels of floatable debris (especially burned trees) in burned watersheds. Once blocked by debris, road drainage structures no longer function and the stream flows over the road, often causing considerable damage and limiting access. Various measures can reduce this risk, including protecting culvert inlets with debris racks, removing large floatable debris from channels upstream of structures before floods, and making heavy equipment available and readily mobilized during storm events to keep structures clear of debris.

Debris flows are less likely than debris-laden flood flows, but they pose a greater threat to roads when they do occur and are difficult to mitigate.

Recommended stabilization treatments for the protection of these roads include installing critical rolling dips, installing rip rap (at low water crossings), increase and clean inlet catch basins, install metal end sections (flared ends), restore drainage function,

plan and implement storm inspection and response, (monitoring roads after storm events, and mobilization of crews if/when necessary).

In addition, two bridges within the burned area were catastrophically impacted, Black Rock Bridge and Lower Deer Creek Bridge. To address immediate post-fire needs, closure of the bridges is the recommended BAER treatment.

Recreation

National Forest System recreation infrastructure includes campgrounds, trails, and day use areas. Most of the recreation assets within the Park Fire burned area relate

to developed campgrounds and trails. Similar to roads, recreation infrastructure and could be damaged in post-fire storm events.

The BAER team identified potential threats to Forest visitors/recreating public, and agency personnel (visiting or post-fire treatments) that are within or downstream/downslope of burned slopes, especially those with a moderate-high soil burn severity (SBS), from flooding and debris flows, hazard trees, loss of ingress and egress along/at

Approximately 99 miles of trails are within the Park Fire perimeter. The priority trails within the fire perimeter are Ishi wilderness trails and the Mill Creek Trail. There is approximately 33 miles of trails within moderate to high soil burn severity (SBS). There are many sections of trail within the unburned or low SBS but are located below moderate and high SBS on steeps slopes that are also vulnerable to increased erosion and damage.

Approximately 95% of the Ishi wilderness burned, with approximately 47% experiencing moderate and high SBS. Approximately 25 miles of trail are within the fire perimeter in the Ishi. Access to the Ishi from NFS lands is possible via roads on the north and east sides. There is concern for public health and safety within the Ishi post-fire.

BAER funds are not requested to treat these trail risks, because the treatments are unlikely to be successful. The trails within or below moderate and high are located on steep cross slopes. The BAER team recommends the Lassen National Forest consider the Forest Service Burned Area Rehabilitation (BAR) program for funding the reestablishment of the trail systems once the trail risk has stabilized. Health and safety recommendations include trail closures until risks have been mitigated or stabilized.

Two developed campgrounds (Black Rock Campground and Hole in the Ground Campground) and one recreation rental (McCarthy Lookout) exist within the Park Fire perimeter. Black Rock Campground was not burned, and direct impact is minimal. There is moderate to high SBS on the slope to the north of the campground that has the potential for debris flow, rock fall, and erosion. The picnic tables, restroom and information boards are at risk of being damaged in this campground. Hole in the Ground Campground was burned and has high SBS on the surrounding slopes. There is a hand water pump, picnic tables, and information boards at this campground. One information board was burned at the base in this fire. The high SBS on the slopes around this campground increases the possibility of debris flow, rolling rocks, hazard trees and erosion. This causes a threat to health and safety and Forest Service property. McCarthy Point Lookout (lookout) completely burned and all that's left is the foundation. The storage garage and CTX (prefab concrete building) were untouched by the fire. There are approximately 12 hazard trees within striking distance of the garage and CTX. The trail to the lookout also burned along with the barriers.

The BAER team recommends closure of Hole in the Wall Campground and McCarthy Point Lookout until human health and safety concerns are mitigated. In addition, the Forest may consider removing picnic tables from the campground to reduce the risk of damage of this minor infrastructure. BAER also recommends the Recreation Residence Tract and the Organization Camp within the burn perimeter are made aware of the potential impact to the water system that serves these areas. The Forest's special use permit administrator should work with permit holders and inform them of the potential risks.

Botany

Invasive plants adversely affect native plant communities through allelopathy (suppression of growth of a native plant by release of a toxin from a nearby invasive plant) and direct

competition for water and resources. Over time, native plant diversity decreases as invasive plants expand, reducing habitat for native plant species and wildlife. Shifts from diverse native plant communities to non-native invasive plant dominance could alter future fire behavior, intensity, extent, and season of burning.

Current infestations are primarily located along roads, old dozer lines, campgrounds, and trails throughout the burned area, with interior areas being largely un-infested. However, the burned area creates conditions for invasive species to outcompete native plants. The BAER team recommends a treatment of Early Detection, Rapid Response (EDRR) to monitor for noxious weed infestation and expansion in areas disturbed due to mechanical suppression activity and burned areas prone to new noxious weed infestations.

There are many known invasive species infestations present throughout the Park Fire footprint, which means that spread of invasives from existing populations into adjacent newly disturbed sites is likely. There may also be unknown infestations present in the burn area, leading to the possibility of further spread of invasives and negative impacts to our native plant communities.

In addition, between 500-1,000 feral cows and pigs are known within the Ishi wilderness, creating an additional vector for dispersal into vulnerable habitats and increasing the amount of disturbance that invasives will attempt to colonize. Visitor use after the fire is another vector for spread into the Ishi Wilderness, which heightens the risk of harmful impacts to native plant communities.

The BAER team recommends the temporary closure of the Ishi wilderness as referenced by botany, recreation, archeology, and hydrology BAER specialists. In addition to the human health and safety perspective, the closure would benefit native plant community recovery by reducing the risk of introduction of invasive species from vectors such as visitor use and the presence of feral cows and pigs.

Cultural Resources

The most typical post-fire threats to cultural sites are physical threats such as erosion or damage from (now dead) falling trees. In some cases, newly exposed artifacts are threatened by human damaging activities such as looting or vandalism. Cultural resources were evaluated by the BAER team with consultation from the Lassen National Forest's tribal partners.

Hazardous Materials

Four hazardous materials sites were identified in Park Fire footprint; Black Rock Bridge, Lower Deer Creek Bridge, McCarthy Point Recreation Site and Lookout, and Mill Creet Trail near Black Rock Campground. Both the Black Rock Bridge and the Deer Creek Bridge decking, beams, rails and posts were constructed with creosote and chemically treated wood (Copper Chromium Arsenate or CCA). Approximately 60-80% of the bridge wood structure burned with a large amount of the partially burned wood still attached to the bridge structure. Much of the burned friable wood fell to the stream channel causing immediate contamination of the water of Mill Creek and to stream banks below the bridge structure and continued leaching of chemicals that are shown to cause mortality in young salmon populations. In addition, a historic building that once served as a fire lookout located at McCarthy Point was fully burned. Materials used in construction likely contained hazardous substances such as asbestos (floor tiles, etc.) and heavy metals (lead used in paints, mercury in electrical appliances, etc.) along with various petroleum products that burned as seen in the building refuse and ash. Lastly, Forest Service hiking and stock trail (Mill Creek Trail #410) had creosote treated 6" x 8"

timbers that were used as trail causeway retainers across a wet spring and seep meadow.

Approximately 200 feet of these wood retainers partially burned, leaching chemicals into the wet meadow and spring. Continued contact with water sources exacerbates the risk of chemical movement.

This trail is a popular hiking route due to its proximity to Black Rock Campground. The proximity and connectivity to Mill Creek poses a continued health risk to human and salmon populations.

The BAER team recommends the cleanup and disposal of hazmat in these areas.

Federally Listed Species - Wildlife and Fisheries

The gray wolf is a federally endangered species, and the California spotted owl is a proposed threatened species. Critical habitat is not designated for the two species. Wolves were detected within and directly adjacent to the Park Fire perimeter in 2023 and 2024, indicating a very high likelihood of regular use of the landscape affected by the Park Fire. There are 8 known California Spotted Owl Protected Activity Centers (PACs) within the fire perimeter, all of which are in the northern reaches of Mill Creek in dense, mature conifer forest. Six of these PACs were occupied immediately before the fire, of which two were occupied by reproductive pairs. The primary threat to gray wolves is related to soil productivity and the delayed or precluded recovery of deer forage and cover habitat as it relates to vegetation mortality, soil burn severity, and the potential for debris flows and landslides. The primary post-fire threats to owls are the delayed recovery and development of critical habitat components (i.e., large trees and snags, structural complexity) as well as delayed recovery of prey species habitat. Owl habitat within areas of moderate to high vegetation mortality likely lost most or all critical owl and prey species habitat components.

BAER funds are not requested to treat these risks. Natural recovery is recommended in addition to supporting road treatments that reduce the risk of erosion.

The BAER critical values for fisheries assessed in the Park Fire were federally listed Central Valley (CV) spring-run chinook salmon, CV steelhead, associated designated critical habitat and the post-fire effects on fish populations in Mill Creek, Deer Creek, and Antelope Creek. All these systems provide unique and important spawning and rearing habitat for CV spring-run chinook salmon and steelhead.

Aerial investigation and ground surveys of Mill Creek, Deer Creek and Antelope Creek discovered that the riparian vegetation along the stream banks were largely still intact and burned at low to moderate soil burn severities. This habitat will prove to be important habitat for all life stages of salmon and steelhead in the post fire environment. The intact and functioning riparian vegetation observed across the Park Fire will help alleviate some of the sedimentation, ash run-off and potential debris flow coming from the headwaters and hill slopes. However, the probability of damage or loss is very likely for Mill Creek**,** Deer Creek and Antelope Creek given the amount of moderate and high soil burn severity observed inside the perimeter of the Park Fire.

It is noteworthy that the adult CV spring-run chinook salmon returning to the watersheds impacted by the Park Fire are some of the highest elevations known for spawning Pacific salmon at 1,800 meters, just over 5,900 feet. Adult spring-run chinook salmon in Mill Creek, Deer Creek and Antelope Creek select large deep pools with moderate velocities to hold during the late spring and summer months. This creates concern for post-fire threats to

habitat including water quality impacts and loss of pool habitat due to geomorphic movement (e.g., debris flows). Historical and current fish population data indicates that the CV spring-run chinook salmon in Mill Creek, Deer Creek and Antelope Creek are in a long-term decline here in California.

Inside the Park Fire perimeter, there is a high risk to anadromous fish and designated critical habitat. To minimize potential impacts to federally listed CV spring-run chinook salmon and steelhead in watersheds impacted by the Park Fire, the BAER team requested funding for emergency treatment. Road stabilization treatments such as installing critical rolling dips, increasing, and cleaning out culvert inlets will help minimize sedimentation into designated critical habitat. It is also recommended to remove hazardous materials along Mill Creek and Deer Creek that help mitigation concerns related post-fire impacts to CV spring-run chinook salmon and steelhead.

While stream and upland habitats along high and moderate soil burn severities in the Park Fire may have considerable impacts, it is not irreversible and is expected to return to pre-fire conditions.

Anticipated Vegetation Recovery

Post-fire recovery varies greatly based on climate, vegetation types and burn severity. It is typical for recovery to take between 3-5 years for reestablishment of ground cover. The persistence of drought in the years following wildfires also delays the recovery time frame. Even with only a short period of time since fire containment, resprouting of trees and shrubs as well as emergence of forbs have been noted within the burned area.

Non-Forest Service Values

Since fire effects know no administrative boundaries, additional threats exist for assets not owned or managed by the Forest Service. Post-fire emergency response is a shared responsibility. There are several federal, state, and local agencies that have emergency response responsibilities or authorities in the post-fire environment. The BAER team and local unit BAER Coordinator has engaged with interagency partners to facilitate consideration of off-Forest values covered through other programs with the relevant responsible entities.

The BAER team focuses on the post-fire effects on soil hydrology and their impacts on Forest Service critical values, including human life and safety. The team's Park Fire assessment benefited from coordination, collaboration, and communication among these BAER team partners and cooperators: the California Watershed Emergency Response Team (WERT); the Feather River Chapter of Trout Unlimited; tribal partners engaged with the BAER archaeologist to ensure that tribal concerns were consistently addressed and that their input was considered in decision-making; Tehama and Butte counties; the Natural

Resources Conservation Service (NRCS); and the Wildlife Group.

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Conclusion

There are multiple phases of post-fire actions after a wildfire covering suppression repair through long-term recovery. BAER is the rapid assessment of burned watersheds by a BAER team to identify imminent post-wildfire threats to human life and safety, property, and critical natural or cultural resources on National Forest System lands and take immediate actions to implement emergency stabilization measures before the first major storms.

The BAER team identified imminent threats to critical values based on a rapid assessment of the area burned by the Park Fire. The assessment was conducted using the best available methods to analyze the potential for damage from post-fire threats, including flooding and debris flows. The findings provide the information needed to prepare and protect National Forest System critical values against post-fire threats. Because of the emergency nature of BAER, initial requests for funding of proposed BAER treatments are supposed to be submitted by the Forest Supervisor to the Regional Office within 7 days of total containment of the fire. The Regional Forester's approval authority for individual BAER projects is limited. Approval for BAER projects exceeding this limit is forwarded onto the Washington Office.

BAER treatments cannot prevent all the potential flooding or soil erosion impacts, especially after a wildfire-changed landscape. It is important for the public to stay informed and prepared for potentially dramatic increased run-off events. Many burned-area watersheds were already hydrologically responsive to rainfall and prone to erosion and sediment transport prior to the fire and will likely be even more responsive due to post-fire conditions. However, vegetation recovery is anticipated to be rapid with ground cover approaching pre-fire conditions within 1-3 years and longer recovery timeframe in the non-timber areas, which will attenuate any post-fire effects on watershed processes.

The Forest Service continues to provide information and participate in interagency efforts to address threats to public and private values resulting from the Park Fire. Information can be found on-line at CalInf Park Postfire BAER Information | InciWeb (wildfire.gov).

The Forest Service continues to work towards long-term recovery and restoration of the burned area in coordination with efforts to rebuild and restore the communities affected. A vegetation burn severity map, or mortality map, may be produced as a part of the recovery efforts to help other scientists, such as wildlife biologists, botanists, and silviculturists understand what to expect from this changed landscape for wildlife habitat, invasive weeds, timber salvage, and reforestation needs.

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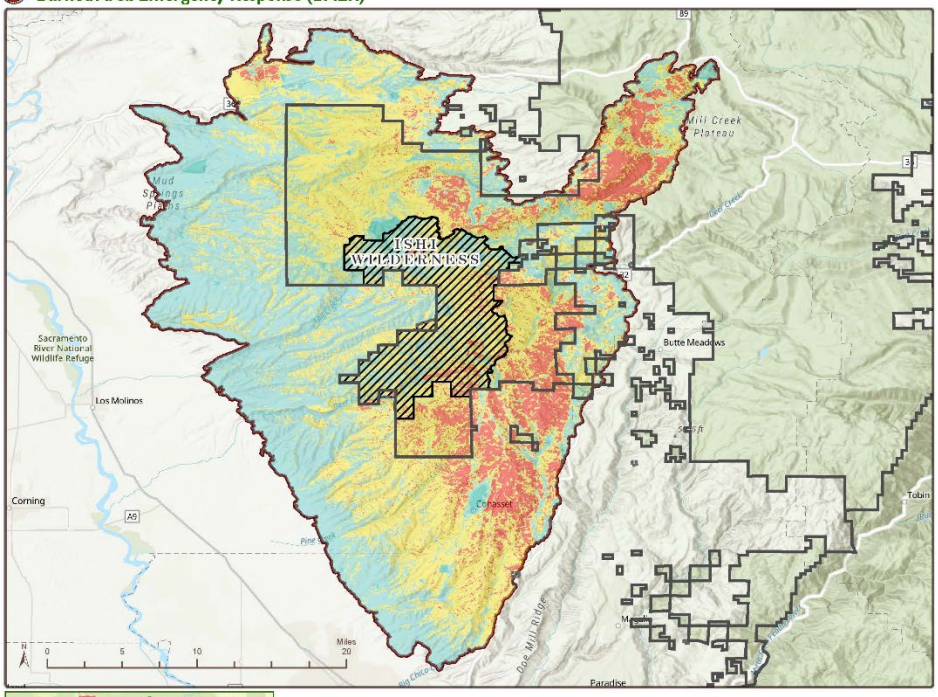
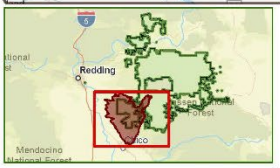
References:

Parson, Annette; Robichaud, Peter R.; Lewis, Sarah A.; Napper, Carolyn; Clark, Jess T. 2010. Field guide for mapping post-fire soil burn severity. Gen. Tech. Rep. RMRS-GTR-243. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 49 p. (https://www.fs.USDA.gov/rm/pubs/rmrs_gtr243.pdf)

2024 Park Fire Soil Bun Severity

Burned Area Emergency Response (BAER)





Soil Burn Severity
- Unburned/Very Low
- Low
- Moderate
- High

- Lassen National Forest
- FS Wilderness Boundary
- BAER Perimeter

Soil Burn Severity

Soil Burn Severity is a measure of the fire's effects on the ground surface and soil condition. This map identifies the fire-induced changes in soil and ground surface properties that may affect infiltration, runoff, and erosion potential. The BAER Team uses this map to identify areas of unacceptable risk to a critical value and where mitigating treatments may be most effective. This product is appropriate for wildland landscapes and does not represent fire effects in developed areas.

Severity Indicators

High soil burn severity: Most or all of the pre-fire ground cover and surface organic matter (litter, duff, and fine roots) is generally consumed, and charring may be visible on larger roots. Soil is often gray, orange, or reddish at the ground surface where large or dense fuels were concentrated and consumed. Soil structure is often altered and less stable at the surface.

Moderate soil burn severity: Up to 80 percent of the pre-fire ground cover may be consumed but generally not all of it. There may be potential for recruitment of effective ground cover from scorched needles or leaves remaining in the canopy that will soon fall to the ground. Soil structure is generally unchanged.

Low soil burn severity: The ground surface, including any exposed mineral soil, may appear brown or black (lightly charred), and surface organic layers are not completely consumed. The canopy and understory vegetation will likely appear "green."

Very Low soil burn severity or Unburned: Little to no burn expected within these areas except in small patches, or where fuels were sparce. Canopy and ground litter almost completely intact. Little to no vegetation mortality expected.

For additional information including photo examples of soil burn severity see the Field Guide for Mapping Post-Fire Soil Burn Severity at: https://www.fs.usda.gov/rm/pubs/rmrs_gtr243.pdf

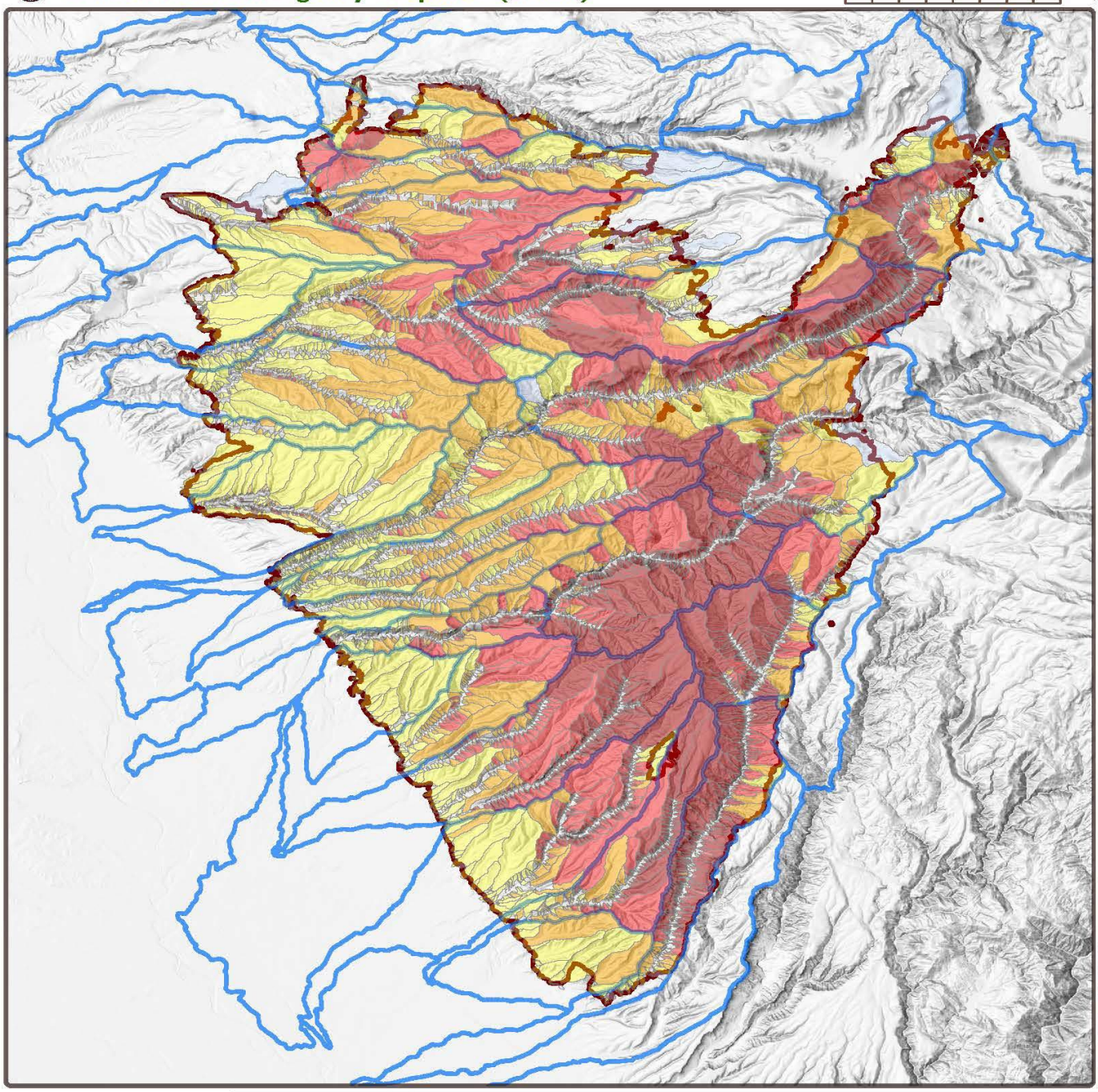
Date: 8/25/2024
SBS Creation Date 8/22/2024
Incident Date: 7/24/2024

Soil Burn Severity	USFS	Non-USFS	Total Acres
Unburned/Very Low	4,925	11,418	16,343
Low	39,674	191,232	230,906
Moderate	57,304	97,556	154,860
High	11,895	16,929	28,824
Total Acres	113,798	317,135	430,933

Resource - Geology Debris Flow

Burned Area Emergency Response (BAER)

Miles
0 2.5 5 10
N



Date: 8/28/2024

Incident Date: 7/24/2024

Debris-flow Probability for a 15-minute Peak Rainfall Intensity (32 mm/h)
- 0-20%
- 20-40%
- 40-60%
- 60-80%
- 80-100%

- Assessment Boundary
- Huc12 Watersheds